



**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

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**OCT - 4 2001**

**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY**

In the Matter of	)	
	)	
Application by SBC Communications	)	
Inc., Southwestern Bell Telephone Company,	)	
and Southwestern Bell Communications	)	CC Docket No. 01-194
Services, Inc. d/b/a Southwestern Bell Long	)	
Distance for Provision of In-Region, InterLATA	)	
Services in Arkansas and Missouri	)	

**REPLY AFFIDAVIT OF BARBARA A. SMITH**

**STATE OF MISSOURI     )**  
**)**  
**CITY OF ST. LOUIS     )**

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COST AND PRICING ISSUES AFFIDAVIT**

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I, Barbara A. Smith, being first duly sworn upon oath, do hereby depose and state as follows:

1. My name is Barbara A. Smith. I am Director – Cost Analysis and Regulatory for SBC Telecommunications, Inc. My business address is One Bell Center, Room 38-Y-03, St. Louis, Missouri 63101. I am the same Barbara A. Smith who filed an initial affidavit in this proceeding on August 20, 2001, addressing costing and pricing issues.
2. As Director-Cost Analysis and Regulatory, I develop cost methods that determine the costs incurred by Southwestern Bell Telephone Company ("SWBT"), among other SBC affiliates, for providing services, supervise the production of cost studies, and analyze cost study results.

**I. PURPOSE OF THE AFFIDAVIT**

3. The purpose of my affidavit is to reaffirm that SWBT relied on forward looking costs in support of interconnection, unbundled network element, collocation, and reciprocal compensation offerings in Missouri, consistent with Federal Communications Commission ("FCC") rules and 47 U.S.C. 271 (c)(2)(B) of the Telecommunications Act of 1996 ("the Act"), as interpreted and applied by the Missouri Public Service Commission ("MPSC").
4. My affidavit reiterates that SWBT's costs developed for Missouri for unbundled network elements were developed in accordance with the Act, 47 U.S.C. 251 (c)(3)(4)(6) and 252 (d)(1). I will explain, consistent with my affidavit filed on August 20, 2001, that the basis for these cost studies (and the methodology used to determine the costs for these elements) comply with the FCC's forward-looking

Total Element Long Run Incremental Costs (“TELRIC”) principles. I will rebut the assertions of AT&T and WorldCom that SWBT’s costs, and the prices ordered by the MPSC, do not reflect the forward-looking costs of those elements.

5. I will respond to the baseless cost and pricing criticisms of AT&T declarant Michael Baranowski and WorldCom declarant Christopher Frentrup. Specifically, Messrs. Baranowski and Frentrup have made demonstrably false allegations regarding access to SWBT’s cost studies and false allegations of non-TELRIC inputs in the loop and local switching studies; and they also have relied on invalid comparisons of UNE prices across different SWBT states.

## II. ACCESS TO SWBT’S COST INFORMATION

6. WorldCom (page 20) and AT&T (page 13) state that SBC has not carried its burden because it has not provided access to its cost models and inputs. This is patently untenable. SBC provided the same cost information in its Missouri 271 filing as it did for Texas, Kansas and Oklahoma. This information included the cost studies that were used as a basis for the rates in Missouri.<sup>1</sup>
7. Now, in an effort to distract this Commission from the Missouri Public Service Commission’s (MPSC) lengthy, thorough and diligent cost proceedings, WorldCom and AT&T, *for the first time*, raise complaints about not having access to electronic versions of SBC’s cost studies in the 271 context. Not surprisingly, during the 271

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<sup>1</sup> SBC had not previously provided any of these cost studies in electronic format except in response to specific requests from the FCC Staff. At the FCC Staff’s request in Docket CC No.01-88, on April 23, 2001, SBC provided the inputs used for the UNE Loop Cost Study, the CAPCS model, populated with the Missouri capital cost inputs and the ACES spreadsheets, modified into an EXCEL format.

hearings in Jefferson City in October and November of 2000, this complaint never was raised before the MPSC. Had it been, it would summarily have been dismissed.

8. As a preliminary matter, WorldCom and AT&T were active participants in the cost portion of the Texas Mega Arbitration, which spanned a 16-month period. (After the first phase of the Texas Mega Arbitration, AT&T remained active in the rest of the SWBT state arbitrations, while WorldCom elected not to participate) During the Texas Mega Arbitration, the Texas Commission ordered SWBT to provide the CLECs with training and access to SWBT's cost models. These are the exact same models that were used in Missouri and the other SWBT states. As a result of the order, during the week of January 27, 1997, SWBT held a 5-day training course in Austin, Texas to train CLEC personnel on the SWBT models and SWBT cost studies. The CLECs had access to electronic and paper versions of SWBT's cost studies. During this week-long training course, 19 people from AT&T and MCI attended. After the workshop in Texas, mini workshops were held in February and March. During this period, almost 100 Subject Matter Experts, who provided inputs to the SWBT cost studies, were deposed. Accordingly, the rather absurd notion that AT&T and WorldCom cannot fully understand SWBT's cost studies and cost models should be rejected.
9. Moreover, during the AT&T Arbitration in Missouri (TO-97-40), AT&T and MCI were given access to SWBT's cost information. Contrary to the CLECs' explicit misstatement to the contrary, the traditional nondisclosure agreement was revised to allow employees of AT&T and MCI access to the cost studies. The cost studies were sent to Austin, Texas to allow AT&T and MCI greater access. Also, during

the hearings in Jefferson City during October 1996, the cost studies were made available to AT&T and MCI via a Proprietary Room in the Capitol Plaza Hotel.

10. In short, the notion that WorldCom and AT&T were unable to examine and understand the cost studies without having electronic access to the models is patently untenable and outright false. SWBT submitted the same cost models in all the SWBT states. WorldCom and AT&T had ample opportunity to understand the cost models and the inputs. Moreover, AT&T and WorldCom had open access to SWBT's cost studies, in Missouri – e.g., during Case No. TO-97-40. In a last ditch effort to confuse this issue and cast unwarranted aspersion on SWBT, AT&T states that there was no need to examine the cost information for Oklahoma and Kansas, so SWBT's argument that it provided the same amount of cost information is moot. However, SWBT provided the same amount of cost study documentation for all the SWBT states, including Texas, in which the CLECs had ample opportunity to examine the cost study data, data which was similar to that submitted for Missouri.
11. Mr. Frentrup complains that SWBT has not “presented the outputs of SCIS that were used to set the switching rates,” and that “SBC has not even provided a description of its cost models.” These statements are entirely inaccurate. All of the paper documentation and outputs of SCIS were provided as part of the filing of the cost study information. Specifically, the “Missouri Local Switching Cost Study Workpapers,” item number 43 on Attachment B to my initial affidavit, provided all the inputs and outputs of SCIS used to develop the costs for the local switching study.

12. As for Mr. Frentrup's allegation that no descriptions of the models were provided, this statement is also plainly inaccurate. Attachment A to my initial affidavit provides a description of the models and a description of how the costs were developed for each unbundled element.

**III. THE MISSOURI COST STUDIES FOR LOOP AND SWITCHING ARE TELRIC COMPLIANT**

13. AT&T and WorldCom have asserted that the Missouri cost studies for loop and switching are not TELRIC compliant. The methodologies for these studies were all TELRIC-based, as outlined in the Local Competition Order. See First Report and Order, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, 11 FCC Rcd 15499 (1996) ("Local Competition Order"). However, the MPSC did not agree with SWBT with regard to numerous inputs; the MPSC ordered input changes to SWBT's cost studies – to further ensure rates were no higher than mandated by TELRIC. SWBT subsequently appealed these changes to the district court and the 8th Circuit Court of Appeals, in part because of SWBT's belief that TELRIC-based prices set by the MPSC violated the plain meaning of the Act. While the 8th Circuit agreed with SWBT's position that the TELRIC-based rates set by the MPSC violated the Act, SWBT agreed to maintain the TELRIC-based prices in the Missouri 271 Agreement (M2A) which are based on the MPSC's TELRIC analysis in Case No. TO-97-40.

#### IV. LOCAL SWITCHING

##### Switch Discounts

14. AT&T and WorldCom have criticized the switch vendor discounts ordered by the MPSC, claiming that the discounts are not TELRIC compliant.<sup>2</sup> The proper switch discount derives from a proper weighing of initial and growth discounts.
15. Switching Cost Information System ("SCIS"), SWBT's switching cost model, is programmed to use the switch discounts as an input to the model, expressed as a percentage. The switch discount is the effective discount from the vendor's list price (the list price often changes at the vendor's election). It actually consists of two discounts: (1) a system discount; and (2) a volume discount. The discount is determined based on signed agreements with the switch vendors (e.g., Lucent and Nortel). The discount is then used in SCIS to discount the vendor's current list prices for equipment. The discounts may vary between users and tend to be unique to each user, as are the prices and the pricing approach.
16. SWBT developed switch discounts using a weighted mix of switch discounts for initial placements of switching equipment and growth jobs to add new line equipment. The prices and the discounts were extracted from SWBT's procurement contracts with its switch vendors, and a weighted average discount for each vendor is derived from contract information.

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<sup>2</sup> Relying solely on AT&T's and WorldCom's analyses, the DOJ, in its response to SWBT's first Missouri 271 application, opines that the MPSC made a "questionable decision" with regard to switch discounts. As the following discussion illustrates, the MPSC appropriately set switch discounts. See Evaluation of the United States Department of Justice, In the Matter of Application by SBC Communications, Inc., et. al. for Provision of In-Region, InterLATA Services in Missouri, CC Docket No. 01-88 (May 9, 2001) ("Missouri DOJ Evaluation").

17. Staff's Costing and Pricing Report concluded that SWBT received discounts in addition to those used in SWBT's original local switching studies. See Final Arbitration Order, Attachment C at 32 (App. G, Tab 11 to SWBT's initial AR/MO Application). To determine the discount, Staff reviewed vendor contracts, Firm Price Quotes ("FPQ") which are prices for a specific job, and purchase orders. Based upon a review of this information, Staff proposed a different discount for both Nortel and Lucent switches. From this information, it derived augmentations to SWBT's discount measures that resulted in discounts of  
  
\*\*                      \*\* for Lucent (up from \*\*                      \*\* originally filed) and  
  
\*\*                      \*\* for Nortel (up from \*\*                      \*\* originally filed). The correct calculation for the discount includes a weighting of growth and replacement discounts. SWBT's original local switching studies proposed in Missouri yielded a price per line of \*\*                      \*\*. After the Commission ordered adjustments were made to the local switching study, the price was \*\*  
  
\*\* per line. AT&T, at the same time, was proposing a \$115 price per switched line in Texas. SWBT's UNE rates in Texas are based on switch discounts that were proposed by AT&T (68% for 5ESS, 72% for DMS100 and 64% for DMS10). These Texas discounts are similar and in some cases even lower than the discounts proposed by the MPSC.
18. AT&T and WorldCom propose a discount methodology based on initial jobs only (although there is no actual discount percentage proposed) and treats all switching investment as initial, resulting in a higher discount and a lower switching investment. CLECs assume a flash cut of switch investment at a single point in time. With their proposal, all switches, in whichever stage of their life cycle,

would be modeled and priced as if they were placed today. SCIS models the switching network as it is at the relevant point in time. SCIS develops investment for existing demand, which consists of switches in different stages of their life cycle (which accurately reflects SWBT's network). In SWBT's network, there are a certain percentage of switches that are relatively new and a certain percentage of switches further along in their life cycle. One cannot physically "flash cut" and replace the entire network, which is the practical effect of what the CLECs propose, by using the discounts received on initial switch placements.

19. When a switch is bid for a dial-to-dial replacement or a new wire center, the company will get the lowest price from the vendors. This is what the CLECs are proposing, a flash cut of all switches in the network, bid out at the lowest price. In an actual network, there are a certain percentage of switches that are relatively new. There is no economic incentive to replace these switches. Realistically, no one would ever consider bidding all switches out in a network for total replacement, especially a new entrant, because their entry is likely to be staged. There are also new lines that must be added to the switches at some point in time and these lines will be added at a much higher price (a lower discount would be applied). The mixture of initial placements and growth jobs is a realistic depiction of a dynamic network. SWBT's existing switches, at the various points in their life cycles, are a snapshot of the same. A properly forward-looking network will have a similar mixture of different aged switches.
20. A recent ALJ draft decision in New York Case 98-C-1357 identifies a "factual problem" with basing switching prices solely on the initial price per switch line

discount negotiated between the switch vendors and the RBOCS. There is a difficulty in ascertaining what the new switch discount would be in a hypothetical situation of an instantaneously installed new system. A new switch discount is set partly in contemplation of additional sales to which only a growth discount would apply. A hypothetical (which is what AT&T and WorldCom are proposing) in which there were no growth discount sales might well be one in which the new switch discount differs from its current level.<sup>3</sup>

21. Certainly the discount on initial/new lines would not be as steep as it is in SWBT's contracts if SWBT were to do a flash cut replacement of all switches. The switch vendors structure contracts so that they cover their total expenses, electing to more deeply discount new/initial lines over growth lines. If SWBT were to purchase only new/initial lines in a flash cut scenario, the vendors would not recoup total costs if they offered their original deep discount on new/initial lines. Clearly, vendors would have to lessen the discount if the only lines ordered were new/initial. They rely on the lesser discount for growth lines to make up for the much steeper discount on new/initial. To go with the CLECs' flash cut hypothetical takes us completely away from what SWBT pays under its contracts, and essentially makes the contracts null and void since the prices/discounts would no longer be relevant.
22. AT&T also complains that the discounts were not appropriately applied to the Engineering and Installation prices within the SCIS model. As explained to the

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<sup>3</sup> The order further states "Discounts will depend on a host of factors, including the contracts negotiated between vendor and purchaser, and we have no reason to believe that Verizon's existing, complex contracts, relied on by both sides as the basis for the radically different discounts they advocated, would, in fact, read the same had they been negotiated in the various contexts that TELRIC or other forms of long-run forward-looking costing might lead us to posit."

Staff, SWBT's vendor contracts used as a basis for the material switch prices did not contain discounts for Engineering and Installation, only for Material; therefore, it would be inappropriate to apply discounts to Engineering and Installation.

23. WorldCom contends that the FCC determined that it should use only the discounts offered for initial switch purchases. From a cursory read, it would appear that the Commission concluded that this was appropriate because initial switches reflected cost-effective, forward-looking technology. A careful reading of the passage, however, does not support this conclusion because the FCC explicitly stated that the inputs in the Synthesis Model were not to be used for purposes other than Universal Service.

24. This passage needs to be understood in the context of the FCC's Universal Service Tenth Report and Order, which culminated the FCC's determination of universal service costs applicable for the federal high cost support for non-rural local exchange carriers.<sup>4</sup> The most pertinent determination made by the FCC in this proceeding was that, even though state commissions may decide otherwise, the FCC did not use company-specific switch investment data. Instead the FCC decided to use public data to develop nationwide switch average investments. The public data used by the FCC has its limitations. The BOC data used by the FCC includes investments for lines. However, the data also includes investments for switch upgrades caused by necessary changes to meet industry and regulatory requirements such as the expansion of the North American Number Plan, which

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<sup>4</sup> See Tenth Report and Order, Federal-State Joint Board on Universal Service; Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, 14 FCC Rcd 20156 (1999) ("Universal Service Tenth Report and Order").

accommodates the introduction and expansion of CIC codes, and the introduction of the 888 code. Unfortunately, the investment effects of upgrades, compared to lines added to existing switches, could not be disentangled using the data set. Given the late date of the determination of inputs for the federal model, the FCC demurred and excluded any investment for a switch that was not sufficiently close in time to the original placement of the switch. In short, the FCC did not possess the means to combine temporally dispersed switch investments in order to develop nationwide average prices for a hypothetical efficient firm. Accordingly, the FCC's results are inappropriate for a TELRIC study.<sup>5</sup> In fact, the FCC "caution[ed] parties from making any claims in other proceedings based upon the input values (switch prices) we adopt in this order." See Universal Service Tenth Report and Order, 14 FCC Rcd at 20172, ¶ 32.

25. Accordingly, WorldCom's arbitrary application of language and data from a FCC order that is not applicable cannot and should not supplant the MPSC's thorough, accurate and relevant switch discount evaluation. As discussed above, the MPSC adopted a discount that is TELRIC compliant.
26. AT&T and WorldCom now make a new argument that SWBT's switch prices are too high because of a claim of a reduction in switching prices over the last 5 years. They make this claim without any evidence of what the actual SWBT contract prices are, nor do they offer any alternative discounts or prices, instead they make general statements "that the switching prices are too high." Mr. Baranowski also

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<sup>5</sup> The Synthesis Model uses publicly available depreciation data to develop switching investment. This approach "will eliminate switches whose book values contain a significant amount of upgrade costs, and recognizes that, when ordering new switches, carriers typically order equipment designed to meet short run demand." See Universal Service Tenth Report and Order 14 FCC Rcd at 20289, ¶ 315. This mention of "short run demand" is a direct violation of the TELRIC rules which require the element under study be representative of total demand."

provides some misleading information regarding switching prices from SBC's federal filing in the Reciprocal Compensation Docket.

27. Mr. Baranowski states that switching prices have declined significantly over the last several years and inappropriately uses attachments to SBC comment filed in CC Docket 99-68, Intercarrier Compensation for ISP Bound Traffic, as the basis for this conclusion.
28. Specifically in footnote 23, on page 37, Mr. Baranowski cites two documents filed by SBC that on closer examination, do not support his position that SBC's switch prices have declined. The Dean Witter Report he cites discusses Pac West's network, which consists of tandem switches being used to transport Internet traffic. Tandem switch costs are not at issue here, rather, it is the cost of local switching that is at issue. The second cite is a press release from Focal Communications that discusses a new type of switch, the ICS2000 broad band switch, which "will allow Focal Communications to limit its investment in traditional Class 5 circuit switch equipment." The type of switching equipment contemplated by Focal Communications to serve Internet traffic is by no means comparable to the type of switching machines deployed by the RBOCs to serve traditional voice traffic.
29. More to the point, the CLECs, attempting to rely on innuendo and intuition, suggest that switch costs have dropped because of a downturn in the economy. Relying on this speculation, the CLECs argue that SWBT's present switching costs are lower than they were when the Missouri TELRIC studies were approved by the MPSC. This argument finds no support in the record or elsewhere. No

evidence exists that costs have either increased or decreased as a result of vendors' financial difficulties.

30. When trying to determine SWBT's present costs for purchasing switches, many factors must be taken into account. For example, the CLECs ignore the one constant in any analysis, inflation, which would increase costs. In support of their contention that costs have decreased, CLECs rely on their intuition that vendors' financial difficulties will result in lower switching costs. This logic is flawed. For example, CLECs ignore that a number of vendors no longer offer telecommunications equipment, resulting in less competition and fewer choices for purchasers like SWBT. CLECs also assume that existing vendors are producing switches in the same volumes as they did when the telecommunications market was flush with capital. CLECs do not account for the probability that vendors have decreased production, thus increasing their costs per switch, which will be passed on to customers like SWBT. In short, there is no evidence that switching costs have increased or decreased. This evidence only can be deduced in a new, comprehensive cost docket – when the MPSC deems it appropriate. Absent this, there is no evidence that the MPSC's cost dockets did anything but establish proper, forward-looking cost, which resulted in the M2A's, TELRIC-compliant rates.

#### **Feature Related Hardware**

31. The term “Feature Related Hardware” (“FRH”) means the hardware components needed to provide features (e.g., 3-port conference circuits necessary for providing 3-Way Calling) that are not part of the SCIS model office reports (which were

used to develop the total investment for the local switching cost study). Because FRH is part of the total switch investment and is not included within the SCIS model office, SWBT calculated the costs outside the model and added the FRH to the total switching investment.

32. AT&T and WorldCom incorrectly assert that the methodology used to calculate FRH overstates the cost, and that the Staff ordered no changes to the FRH factor.<sup>6</sup> SWBT used the Continuing Property Records (“CPR”), a system that keeps a record of the physical inventory of each central office and includes the prices paid for each piece of equipment in that office, to identify FRH. This system is *required* by FCC Rule 47 C.F.R. 32.2000(E). The CPR is the basis for the total historical investment in switching depicted in annual reports to various agencies. It is this hardware that is provisioned as part of the unbundled local switching element. SWBT used this method to identify the quantities and investment of FRH that existed in each central office. SWBT began with historical investment for the FRH, and converted it to current investment using a Current Cost to Booked Cost Ratio.
33. AT&T incorrectly asserts that no adjustments were made to FRH; this is belied by the Staff report. After the MPSC Staff’s review of the *Local Switching Cost Study*, several changes to the feature related hardware methodology were recommended and subsequently adopted. The first modification required applying the FRH factor only to the study’s 5ESS and DMS100 switching investment. The factor was based upon FRH for these 2 types of switches, but then was applied to

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<sup>6</sup> Again relying on AT&T and WorldCom comments, the DOJ, in its comments to SWBT’s first Missouri 271 filing, indicated that another “possible error[] that may have affected the Missouri switch prices include SBC’s particular application of the ‘hardware factor[.]’” See Missouri DOJ Evaluation at 15. As discussed below, this is not the case.

all switching investments, including DMS10 and Ericsson. Staff recommended applying the factor to the DMS100 and 5ESS switching investment in the study, and applying the factor only to non-line investment. See Final Arbitration Order, Attachment C at 43.

34. Staff expressed concern regarding possible double counting of the input/output ports, but these items are not included in the SCIS model so there is no double counting. However, regarding the allegation of double counting, Staff made the following statement in its report: “[t]herefore, SWBT should not be allowed to charge separately for any of the functionality provided by the equipment included in the hardware factor.” See Final Arbitration Order, Attachment C at 43.

Accordingly, the notion that SWBT was able to double count investments again is contradicted by the MPSC's order addressing and resolving the issue.

35. The cumulative effect of all Staff's recommended changes to the Unbundled Local Switching Cost Study was to reduce the costs by 64%.

## **V. UNBUNDLED LOCAL LOOP**

### **SBC's Loop Cost Studies Are Forward Looking And Do Not Replicate The Existing Network**

36. AT&T incorrectly asserts that SBC's cost studies simply “replicate” or “reproduce” the existing network. This allegation is entirely false. SBC has developed cost studies based on a forward looking methodology, using forward looking network designs, efficient technology and current vendor contracts. The methodology and network designs used to develop the loop study are forward looking and derive a loop cost that is substantially below the costs that would result if SBC relied on the existing network.

37. For example, in the real existing network, the vast majority of loops (roughly 90%) are copper loops. In SBC's UNE loop study, the ratio falls to a more economical \*\* \*\* split. This is because, within the study, all loops that are longer than the copper/fiber breakpoint are assumed to use a fiber-based digital loop carrier ("DLC") system. Because SBC uses this assumption, the use of very expensive 22 and 19 gauge cable, which is deployed in the existing network in order to maintain signal integrity, is completely ignored in the study. SWBT instead assumes that these longer loops, which may require 22 and 19 gauge cable, are developed as if they were on fiber based systems
38. SBC has conducted xDSL loop studies using the same loop cost model. These xDSL studies assume that no DLC equipment is used because it conflicts with the xDSL signal. These cost studies are probably more reflective of the actual loop deployment in SBC's network. The cost results from these studies are substantially higher than the results of the UNE loop studies, which assume the widespread use of DLC equipment with fiber.
39. The Missouri UNE loop study, which is the basis for the M2A rates, further illustrates this point. Because of SBC's forward-looking assumptions, which include a copper/fiber crossover point when copper cable is included in the study, the study only assumes 26 and 24 gauge cable. The study ignores the more expensive 19 and 22 gauge cable. This assumption further distinguishes the TELRIC UNE loop study from the existing loop network, again to the benefit of CLECs.
40. The MPSC Staff also recognized in the Costing and Pricing Report, that SWBT's

loop cost studies do not mimic the existing network. See Final Arbitration Order, Attachment C at 21. Staff stated: “[t]his assumption (the economic 15 kft fiber/copper crossover point) does represent a significant departure from the actual network in place today. For example in the rural rate Zone 3, this assumption results in over 33% of the feeder being provisioned with fiber optic cable while in reality only about 6% are currently provisioned with fiber.” Critical CLECs neglect to cite this language when criticizing the Staff’s scrutiny of SWBT’s cost study.

41. Mr. Lieberman claims that cable and wire investment decreased “resulting in an overall decline of 36% from 1996 to 2001.” Mr. Lieberman makes this statement based on a net investment analysis which is incorrect. Even if his analysis were correct, the so called “overall decline” is more than accounted for in the reduction of loop rates from those originally proposed. Below is a chart that shows the loop rates originally proposed in 1996, the Commission Ordered loop rates and those currently proposed. As shown, the statewide average loop rate has declined by 48%, which more than compensates for Mr. Lieberman’s recommended downward adjustment of 36%.

**MISSOURI LOOP  
RATE COMPARISON**

<b>GEOGRAPHIC GROUP</b>	<b>ORIGINALLY PROPOSED RATES 1996</b>	<b>COMMISSION ORDERED RATES 1997</b>	<b>CURRENT RATES w/ DISCOUNT</b>
<b><i>GROUP D</i></b>	\$16.95	\$12.71	\$12.71
<b><i>GROUP B</i></b>	\$27.08	\$20.71	\$18.64
<b><i>GROUP A</i></b>	\$42.62	\$33.29	\$19.74
<b><i>GROUP C</i></b>		\$18.23	\$16.41
<b><i>STATEWIDE AVERAGE</i></b>	\$22.45	\$16.87	\$15.18
<b><i>REDUCTION 1996 OVER 1997</i></b>		33%	
<b><i>REDUCTION 1996 OVER CURRENT</i></b>			48%

**Forward Looking Cable Investment In The Loop Cost Studies**

42. Another incorrect assumption made by AT&T is that SBC uses embedded cable costs in its loop study. SBC used the 1996 "Broadgauge" cable investment manual as the basis for the cable prices in the loop study. This was the latest "Broadgauge" manual available when the loop study was conducted. The "Broadgauge" cable investment manual is developed annually and includes the current vendor contracts for outside plant cable. "Broadgauge" also includes the telco labor for placement and splicing. SWBT also adds the contractor labor based on the latest contracts in place with the companies who trench and place cable for SWBT. The "Broadgauge" is used by outside plant planning personnel to estimate the costs of construction jobs.

43. The "Broadgauge" manual includes cable prices for every cable size, which includes aerial, buried and underground cable. These cable sizes can range from

as small as 25 pair (used in distribution), to 4200 pair, which is typically used in a feeder plant. A practical problem in the loop study is how to develop the cost of an average loop based on all these different pair sizes of cable. SBC keeps records of the types and amounts of cable placed in its network. This inventory, used with the current Broadgauge costs for cable, was used to help develop the average cost per pair foot for feeder and distribution.

44. The Staff discussed the “Distribution to Code” cable weightings in its Costing and Pricing Report. See Final Arbitration Order, Attachment C at 16-17. Staff made adjustment to these percentages, reducing the percentage of aerial cable to \*\*  
\*\*. Staff also made other adjustments as shown in the chart on page 17, which they believed reflected a more forward-looking network.
45. So, the SBC loop study is clearly based on a forward-looking network. The use of existing SBC data is appropriate where existing values are either not expected to change or where they are the best estimate of forward-looking values. For example, most cost factors are based on actual SBC data (e.g., maintenance expenses). This does not mean that SBC assumes forward-looking maintenance expenses will equal current maintenance expenses. Since this factor is applied to (multiplied by) TELRIC investment costs, any reduction in forward-looking investments from embedded investments will automatically flow through to maintenance costs.

**SBC's Loop Studies Correctly Consider Tapering of Feeder and Distribution Cable.**

46. AT&T also alleges that SBC's loop studies do not take into account the tapering of cable, allegedly making them TELRIC non-compliant.<sup>7</sup> This allegation is the result of another misunderstanding of how SBC's loop studies are conducted. SBC accounts for cable tapering by weighing the different sizes of cable to develop an average pair foot investment for the loop study. For example, a feeder cable may consist of a 4200 pair cable leaving the central office cable vault, which gradually tapers down to a 600 pair cable at the Feeder Distribution Interface ("FDI"). All of the cable sizes and their corresponding lengths from the company inventory of cable are used in the calculation of the average pair foot investment for the total cable including feeder and distribution. The FDI inventory is then used to determine what cable sizes are part of the feeder cable. The residual is assumed to be distribution cable. However, because the entire inventory of cable sizes is used as a starting point to determine the average cost per pair foot for the entire cable, any feeder cable sizes not included because of the FDI methodology would then become part of the distribution cable. Because of this methodology, the feeder cable is slightly overstated and the distribution cable is slightly understated, evidencing no error by the MPSC and certainly no violation of TELRIC principles.

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<sup>7</sup> The DOJ, in its initial report on SWBT's first Missouri 271 filing, again relying on AT&T's and WorldCom's evaluations, indicated that another "possible error" that may have affected Missouri loop prices include[s] the failure to allow for tapering of feeder cable." See Missouri DOJ Evaluation at 16. As discussed, this is not the case.

**SBC's Loop Distribution Fill Is TELRIC Compliant And Based On Forward Looking****Information**

47. AT&T and WorldCom state that the Missouri loop rates are not TELRIC compliant because the distribution fill is too low. Notably, neither AT&T, the DOJ nor WorldCom provide any justification for proposing higher fill factors in Missouri.<sup>8</sup> Indeed, there is no record evidence contradicting SWBT's proposed fill factor. In Missouri, SWBT proposed actual fill factors for distribution cable based on current levels to total capacity. The MPSC disagreed with SWBT's proposal and insisted on a higher fill factor. This fill factor is forward looking because in the future, the methods for sizing and placing distribution cable remains the same, resulting in distribution fill factors that remain consistent with what is being experienced today in the network.
48. In addition, WorldCom's reliance on the FCC's synthesis model is misplaced. The fill factor in the synthesis model is but one component of an inappropriate study. Absent evidence, of which there is none, that the MPSC improperly determined the fill factor, the synthesis model is inapplicable to this analysis. Finally, the Texas Public Utilities Commission approved a 40% fill factor in Texas, discussed below.
49. The FCC's Local Competition Order addresses fill factors in paragraph 682:
- We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the

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<sup>8</sup> In its Evaluation Report of SWBT's first Missouri 271 filing, DOJ suggests that, "[a]lthough the Missouri PSC modified SBC's [fill factor] proposals, the asset lives chosen are significantly shorter than those used (both the Missouri PSC and other state commissions) in other proceedings." See Missouri DOJ Evaluation at 16.

forward-looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs. Per-unit costs shall be derived from total costs using reasonably accurate “fill factors” (estimates of the proportion of a facility that will be “filled” with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual usage of the element. Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible. For example, the costs of conduits shared by both transport and local loops, and the costs of central office facilities shared by both local switching and tandem switching, shall be attributed to specific elements in reasonable proportions. More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible. The forward-looking costs directly attributable to local loops, for example, shall include not only the cost of the installed copper wire and telephone poles but also the cost of payroll and other back office operations relating to the line technicians, in addition to other attributable costs. (Footnote omitted)

50. The FCC also, "...conclude[d] that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements." See Local Competition Order ¶ 685.
51. Distribution plant is generally designed to serve a neighborhood. It is increasingly made up of buried cables, which are designed to be large enough to meet the ultimate needs of the serving area. The facility should be large enough so that it never needs to be augmented during its physical life. This is a simple matter of economics and service quality. If utilization (fill) runs too high, there may be a need for very expensive and disruptive additions to the distribution plant – including digging up lawns and tearing up driveways and streets. If a distribution system exhausts, it can cause a delay in providing service to customers.
52. Design engineers, who make distribution cable sizing decisions, do not know how many lines a customer will order for a home at the time the sizing decision is made. Design engineers need to provide sufficient capacity to provide service. The economics of reinforcing exhausted distribution cables favors placing larger cables initially. In spite of this uncertainty, the fill rates for copper distribution cables have remained virtually constant over time. The distribution fill factor used in the loop study is a composite fill rate for many sizes of cables, not a specific cable. A new cable has 0% fill on day one and gradually increases over time. During this time, many changes occur, resulting in some cables remaining

underutilized and others needing additions. These changes are expected on a forward-looking basis, which is one reason why SBC believes forward-looking fill factors will not deviate substantially from current average fill in the network.

53. It is also important to note that cables are only available in certain sizes, e.g. 25 pair, 50 pair, 100 pair, 200 pair. You simply cannot buy a 60 pair cable.

Therefore if a design engineer wants to size the distribution cable at 2 pairs per living unit in a new 30-lot subdivision, a 100 pair cable will have to be placed.

This limitation in available cable sizes affects the distribution fill factor.

54. The fill factors that result from the combination of placing for ultimate demand and the limitation of cable sizes result in distribution fills in the 30-40% range.

These distribution fills have remained constant over time. Although this number may seem low, it is the average of a geographical zone in which some areas may experience unexpectedly large demand increases, while others may lag and never reach their expected utilization levels.

55. Although there is some increasing use of telephone lines for applications such as adding a fax machine or Internet access, these will have a modest impact on the distribution fill. With the increase in DSL, this new service could have the opposite impact of decreasing the fill. All these factors must be taken into account when plant is placed. The distribution fill remains constant over time, which means it can be used as a forward-looking fill factor, since it will be expected to be the same in the future.

56. The FCC's Local Competition Order, provides for deriving per-unit costs "by dividing the total costs associated with the element by a reasonable projection of

the actual total usage of the element.” See Local Competition Order, ¶ 682.

SWBT studies used current “fills,” or utilization levels, actually experienced in SWBT’s forward-looking efficient network. It is these fills that SWBT anticipates experiencing for its network usage into the future.

57. AT&T and WorldCom contend that the Staff has no basis for choosing a 40% fill factor for distribution. The Staff spent a great deal of time reviewing the fill assumptions in SWBT’s studies, discussed, in part, above. The consideration of additional lines also impacted the ordered increase of the distribution fill factor. It should be noted that the 40% distribution fill ordered by the MPSC is exactly the same as what was ordered in Texas for the Texas UNE loop studies. The CLECs do not provide any support for why the fill should be higher, only the bald and incorrect assertion that the fill factor is not forward looking and the Synthesis Model uses something higher.

#### **SBC Incorporates The Correct Amount Of Pole And Conduit Sharing In Its Loop Studies**

58. Yet another incorrect representation made by AT&T is that SBC does not include an appropriate amount of pole and conduit sharing in its loop studies. The Costing and Pricing Report clearly discusses this recommended modification to SWBT’s loop study. The Staff adjusted the way the pole and conduit factors were developed – in addition to considering the sharing of pole and conduit investment. In the Staff’s Costing and Pricing Report, the recommendations for the derivation of pole and conduit investment are discussed. See Final Arbitration Order, Attachment C at 7. Staff recommended determining the pole investment, less any sharing (6.41%), and multiplying that number by the number of poles per aerial

span. The Staff also noted that SWBT's pole investment already reflects the poles that are shared with Union Electric Company. See Id. The same type of adjustment is made to the conduit investment to account for sharing.

### **Integrated Digital Loop Carrier vs. Universal Digital Loop Carrier**

59. AT&T complains that the amount of IDLC assumed in the SWBT loop study, which was originally zero, and subsequently ordered at 25%, is too low to comply with TELRIC. They argue that the least cost, most efficient design for provisioning unbundled loops is to provision IDLC 100% of the time. To the contrary, because 100% IDLC provisioning is grossly inefficient and impracticable. The CLECs' proposal would violate TELRIC.
60. AT&T's position is without merit because it is founded on a misunderstanding of the basic technical architecture involved in provisioning unbundled loops.
61. Historically, network access lines were provided through a continuous transmission path over individual pairs of copper wires. Advances in digital transmission technology, coupled with the development of digital switching and an increased demand for telephone services, make it efficient to use digital transmission technology and fiber optic facilities to provision network access. Examples of this advanced technology include Digital Loop Carrier ("DLC") systems, the use of which is most appropriate when either network congestion is a concern or loop lengths are increased.
62. Through DLC, a large number of loops can be aggregated at a particular point in the network, such as a hut or cabinet. Individual copper loops from the customer side are connected to a remote terminal ("RT"), which converts analog signals to

digital form and combines them on a single facility for transmission back to the central office. In the most forward looking environment for provisioning unbundled loops (which is the environment reflected in SBC's loop cost studies), a fiber optic facility connects the RT to a corresponding central office terminal ("COT"), which in turn de-multiplexes the signals through the use of plug-in circuit cards. Jumper wires then terminate each individual loop on to the main distributing frame ("MDF") at the central office. This type of configuration, which is necessary to unbundle a single loop from the DLC system, is referred to as non-integrated or universal digital loop carrier ("UDLC").

63. Unbundled loops cannot be provisioned with the IDLC equipment just described. Only a non-integrated DLC and its associated equipment can enable individual unbundled loops to be terminated on the MDF for cross connection to the CLEC. Unbundled loops cannot be extracted or "groomed" from an IDLC system without significant additional expense.
64. SBC's cost study for unbundled loops reflect these technical realities. The cost study includes costs for the RT, the COT, and the plug in UDLC circuit cards used in each terminal that allow the unbundled loops to be terminated on a non-integrated basis. Also included are the cabinets or huts housing this equipment. The forward looking design for the provisioning of unbundled loops assumed that all loops using DLC equipment were provisioned on a non-integrated basis, thus enabling them to be readily cross connected to the MDF.
65. The MPSC ordered SWBT to assume 25% IDLC in its loop study. The revised loop cost study with the Commission ordered input for IDLC does not include any